

## THE GENUS *Eudemis* Hübner (LEPIDOPTERA, TORTRICIDAE, OLETHREUTINAE) FROM CHINA, WITH DESCRIPTION OF ONE NEW SPECIES

YU Hai-Li<sup>1,2</sup>, LI Hou-Hun<sup>1\*</sup>

1. College of Life Sciences, Nankai University, Tianjin 300071, China

2. College of Life Sciences, Northwest University, Xi'an 710069, China

**Abstract** Four species of *Eudemis* Hübner are recorded from China, with *E. zhengi* sp. nov. described as new. The diagnostic characters of the three previously known species in China, *E. lucina* Liu et Bai, *E. gyrotis* (Meyrick) and *E. porphyra* (Hübner), are discussed. Photographs of adults and genitalia of the new species are provided, along with a key to the Chinese species based on the male genitalia.

**Key words** Lepidoptera, Tortricidae, Olethreutinae, *Eudemis*, new species, China.

### 1 Introduction

*Eudemis* Hübner, 1816 is a small genus in Olethreutini, represented by seven species: *E. profundana* ([Denis & Schiffermüller], 1775), *E. porphyra* (Hübner, [1796–1799]), *E. gyrotis* (Meyrick, 1909), *E. centritis* (Meyrick, 1912), *E. polychroma* Diakonoff, 1981, *E. lucina* Liu & Bai, 1982, and *E. brevisetosa* Oku, 2005. They are known from Palearctic Region, the Oriental Region and Madagascar (Hübner, 1825; Meyrick, 1909, 1912; Diakonoff, 1981; Kawabe et al., 1982; Liu & Bai, 1982; Kawabe et al., 1992; Byun et al., 1998; Kuznetsov, 2001; Liu & Li, 2002; Oku, 2005; Baixeras et al., 2010). Three of these species were recorded in China previously (Liu & Bai, 1982; Liu & Li, 2002; Kawabe et al., 1992). The present paper deals with four species of the genus from China, with one species described as new to science.

### 2 Material and Methods

Material examined in this study was collected by light trap in the field of mountainous areas of China. The descriptions of the wing patterns follow the terminology proposed by Brown and Powell (1991) as refined by Baixeras (2002). Genitalia dissections follow Li and Zheng (1996). The abdomen and genitalia are slide-mounted using Canada balsam. Photographs of adults and genitalia were taken with an Olympus C-7070 digital camera. The types and other specimens examined are deposited in the Insect Collection, College of Life Sciences, Nankai

University, Tianjin, China.

### 3 Genus *Eudemis* Hübner, 1816

*Eudemis* Hübner, 1816. Verzeichniss bekannter schmetterlinge: 382.

Type species: *Tortrix profundana* Denis & Schiffermüller, 1775.

**Diagnosis.** *Eudemis* species are medium-sized moths. They usually possess the following combination of characters: in the male genitalia, uncus small, ovate; socius slender, drooping and densely spined; gnathos a membranous transversal band, or sclerotized strongly and with median or lateral prominences; valva slender, sacculus short and narrow, carrying one spine cluster ventrally, neck indistinct, cucullus spined, simple, without ventral prominence; and aedeagus short, without cornuti; in the female genitalia, sterigma complicate, lamella postvaginalis ear-like; colliculum distinct, weak or sclerotized; ductus bursae long; corpus bursae with two horn-shaped signa.

*Eudemis* species are characterized by having a conspicuous postmedian fascia on the forewing. Unfortunately, the mark can also be found in many members of *Eudemopsis* and *Sorolopha*. The superficial differences of the three genera are as follows: in *Eudemis* and *Eudemopsis*, the sex scales are absent in male; the fascia on the forewing in *Eudemis* is often darker and lacks the reddish brown covering, while in *Eudemopsis* it is often covered with reddish brown or ochreous scales; most species of *Sorolopha* have green shades on the forewing, and bear long hair pencils on hind legs and at lateral sides of the male abdomen.

This research was supported by the National Natural Science Foundation of China (31000972), Doctoral Fund of Ministry of Education of China (20096101120008), Natural Science Foundation of Shaanxi Province of China (SJ08-ZT01) and Foundation of Shaanxi Educational Committee of China (08JK466).

\* Corresponding author, E-mail: lihouhun@nankai.edu.cn

Received 12 May 2011, accepted 13 June 2011.



### Key to Chinese species of *Eudemis* based on the male genitalia.

1. Gnathos membranous or weakly sclerotized, without prominence ..... 2  
    Gnathos sclerotized, with a median prominence ..... 3
2. Sacculus about 2/5 length of valva, carrying a cluster of dense hairs at apex; cucullus with dense bristles ..... *E. porphyra* (Hübner)  
    Sacculus less than 1/3 length of valva, with sparse hairs at apex; cucullus with sparse bristles ..... *E. lucina* Liu et Bai
3. Gnathos with slender and naked median prominence reaching basal 1/4 length of tegumen, lateral prominences absent; sacculus carrying a basal spinous cluster 1/2 length of valva, with an angular ventromedial prominence and a short spinous cluster at middle on outside; cucullus with a spinous cluster on basal 2/5 of ventral margin ..... *E. gyrotis* (Meyrick)  
    Gnathos with broad and short median prominence reaching 1/2 length of tegumen, lateral prominences square plates; sacculus with a basal spinous cluster 1/7 length of valva, without above prominences and spinous cluster; cucullus without spinous cluster on ventral margin ..... *E. zhengi* sp. nov.

### 3.1 *Eudemis zhengi* sp. nov. (Figs 1–2)

Head with vertex coarse, brownish fuscous. Antenna fuscous. Labial palpus lost, basal segment white. Thorax brown fuscous, posterior crest indistinct; collar and tegula blackish fuscous. Leg white, with small black dots sparsely; all tarsi and media tibia blackish fuscous, with small pale yellow dots, all tarsal subsegments carrying pale yellow rings at apex.

Forewing length 8 mm, upperside ground color grayish fuscous, somewhat paler on vannal region; with many clusters of deep fuscous erected scales, few of which white on vannal region; costa with nine pairs of strigulae, basal four pairs pale fuscous, distal five pairs brownish fuscous; striae from them indistinct; basal and subbasal fasciae fuscous, with scattered small pale fuscous patches; median fascia deep fuscous,

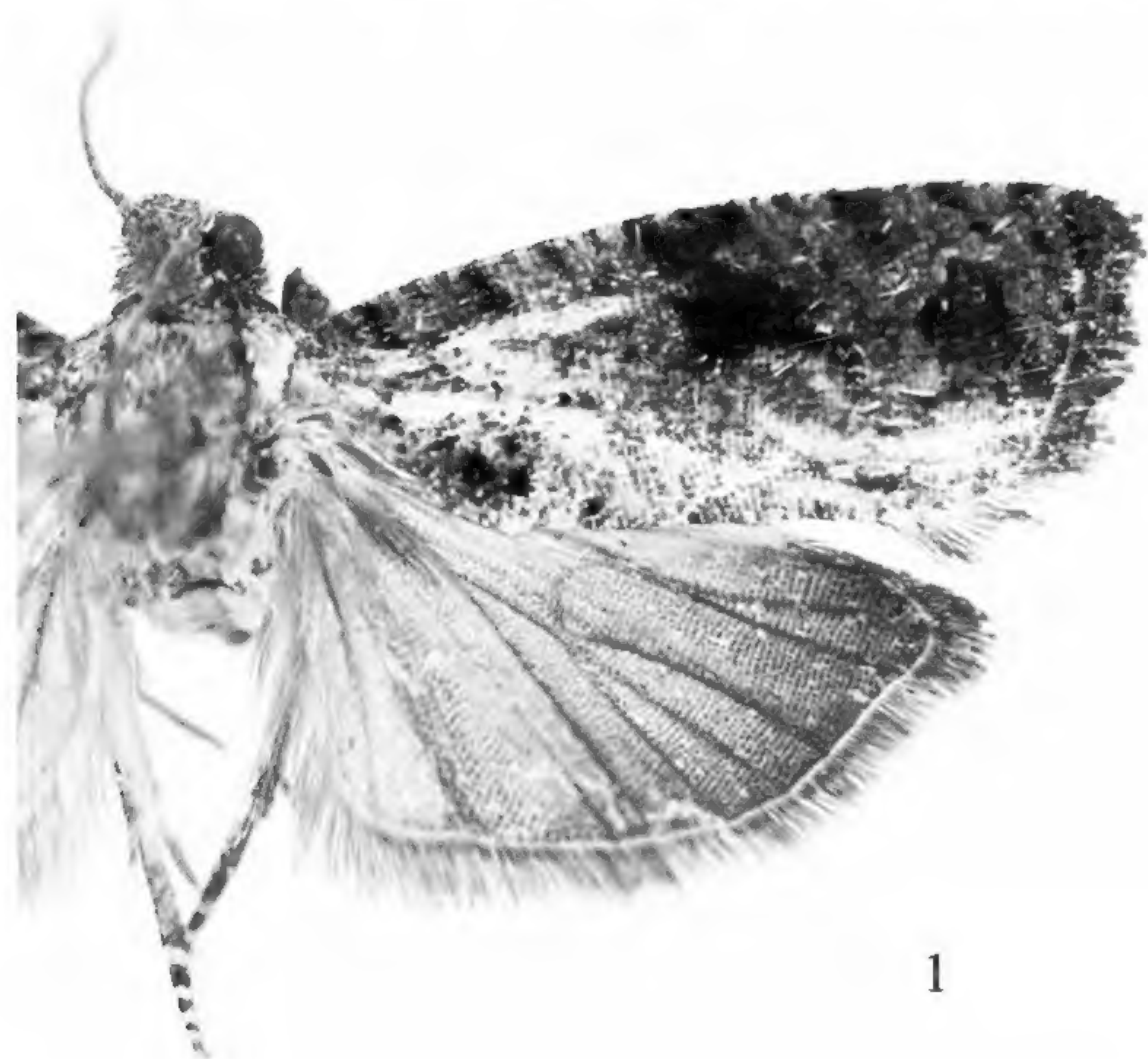
rectangular, extending backward to middle of wing; terminal fascia a very small dot, deep fuscous; a rounded spot set between  $R_5$  and half length of  $M_3$ , deep fuscous; an ellipse spot set between 2/5 length of  $CuA_1$  and dorsum, brownish fuscous; cilia fuscous; underside fuscous, with pale yellow strigulae, dorsum white. Hindwing upperside grey, costa with basal half white, cilia grayish fuscous; underside grayish fuscous.

Male genitalia (Fig. 2). Tegumen narrow. Uncus semi-oval. Socius drooping, sparsely with long hairs. Gnathos sclerotized strongly, with a median prominence and two lateral prominences; median prominence tongue-shaped, laterally with a small median angle carrying small dentations; lateral prominences short fingerlike, expanded and somewhat squared distally. Valva slender; sacculus about 1/3 length of valva, bearing a cluster of short hairs near base; cucullus with dense spines. Aedeagus straight, moderate in length, basal half somewhat thick, distal half membranous dorsally; cornutus absent.

Diagnosis. This new species can be easily distinguished from other species of the genus except *E. gyrotis* (Meyrick) by the gnathos with a median prominence. The differences between this new species and *E. gyrotis* are described in detail in the key to species.

Holotype ♂, Mengla (21°29'N, 101°33'E; alt. 650 m), 25 Aug. 2005, leg. REN Ying-Dang, genitalia slide No. YHL05159.

Etymology. This species is named in honor of Professor ZHENG Zhe-Min for his outstanding contribution to the systematic entomology.



1



2

Figs 1–2. *Eudemis zhengi* sp. nov. 1. Adult. 2. Male genitalia.

### 3.2 *Eudemis gyrotis* (Meyrick, 1909)

*Eudemis gyrotis* Meyrick, 1909. *J. Bombay nat. Hist. Soc.*, 19: 604.

*Olethreutes gyrotis*: Inoue, 1954. *Check list of the Lepidoptera of Japan*, I: 107.

*Eudemis gyrotis*: Issiki, 1957. In: Esaki et al. (eds.), *Icones Heterocerorum Japonicorum in Coloribus Naturalibus*: 69.

Diagnosis. This species is similar to *E. porphyra* (Hübner) in appearance, but can be separated from it by the gnathos with a slender median prominence and the valva carrying a long spinous cluster in the male genitalia.



Material examined. 1 ♂, Guizhou Province, Rongjiang County (25° 56' N, 108° 30' E; alt. 680 m), 15 Sep. 2005, leg. ZHANG Jia-Liang.

Food plants. *Morella rubra* Loureiro (Myricaceae) (Liu & Li, 2002).

Distribution. China (Guizhou, Guangxi, Anhui, Fujian, Jiangxi, Guangdong, Sichuan, Taiwan); Japan, Russia.

Remarks. Kawabe *et al.* (1992) reported this species from Taiwan, China.

### 3.3 *Eudemis lucina* Liu & Bai, 1982

*Eudemis lucina* Liu & Bai, 1982. *Entomotaxonomia*, 4 (3): 171.

Diagnosis. This species is similar to *E. porphyra* (Hübner) both in appearance and in the male genitalia. It can be distinguished by the darker markings and the presence of a remarkable white dot at the upper angle of cell on the forewing. The differences in the male genitalia between them are stated in the key to species.

Food plants. *Quercus serrata* Murray, *Q. dentata* Thunb. and *Q. mongolica* Fischer ex Ledebour (Fagaceae) (Oku, 2005).

Material examined. 2 ♂♂, Jilin Province, Mt. Changbai (42°02'N, 128°08'E; alt. 1 010 m), 4–5 July 2004, leg. ZHANG Ai-Huan; 1 ♀, Mt. Tianmu (30°26'N, 119°34'E; alt. 1 140 m), 17 Aug. 1999, leg. LI Hou-Hun; 1 ♂, Henan Province, Neixiang County (33°02'N, 111°50'E; alt. 1 350 m), 14 July 1998, leg. LI Hou-Hun; 2 ♂♂, 2 ♀♀, Hubei Province, Hefeng County (29°53'N, 110°02'E; alt. 1 260 m), 15–16 July 1999, leg. LI Hou-Hun; 4 ♂♂, Hubei Province, Shennongjia (31°45'N, 110°40'E; alt. 1 800 m), 8 July 2009, leg. WANG Min and LONG Yang; 1 ♀, Shaanxi Province, Foping County (33°32'N, 108°E), 20 July 1985, leg. LI Hou-Hun; 1 ♀, Shaanxi Province, Yangling (34°17'N, 108°04'E), 13 July 1985, leg. LI Hou-Hun.

Distribution. China (Jilin, Zhejiang, Henan, Hubei, Shaanxi); Japan, Korea.

### 3.4 *Eudemis porphyra* (Hübner, [1796–1799])

*Tortrix porphyra* Hübner, 1796–1799. *Sammlung eur. Schmett.*: pl. 5, fig. 26.

*Olethreutes porphyra*: Hübner, 1822. *Syst. - Alph. Verz.*: 63.

*Eudemis porphyra*: Hübner, 1816. *Verz. Bekannter Schmett.*: 382.

*Poecilochroma pomedaxana*: Pierce & Metcalfe, 1915. *Entomologist's Mon. Mag.*, 51: 9.

*Eudemis pomedaxana*: Pierce & Metcalfe, 1922. The genitalia of the group Tortricidae of the Lepidoptera of the British Islands: 45.

*Argyroploce pomedax*: Meyrick, 1927. *Rev. Handb. Brit. Lep.*: 578.

Material examined. 1 ♀, Jilin Province, Mt. Changbai (42°02'N, 128°08'E; alt. 730 m), 2 Aug. 2004, leg. ZHANG Ai-Huan; 1 ♂, Heilongjiang Province, Heihe (50°14'N, 127°29'E; alt. 170 m), 26 July 1997, leg. LI Hou-Hun; 3 ♂♂, Zhejiang Province, Wuyanling (27°33'N, 119°42'E; alt.

1 000 m), 3 Aug. 2005, leg. XIAO Yun-Li; 1 ♂, Guizhou Province, Mt. Fanjing (27°55'N, 108°41'E; alt. 2 100 m), 30 July 2001, leg. LI Hou-Hun and WANG Xin-Pu; 1 ♂, same data except 1 700 m, 29 July 2001; 9 ♂♂, Henan Province, Song County (34°08'N, 112°05'E; alt. 1 580 m), 18–22 July 2002, leg. WANG Xin-Pu; 2 ♂♂, Henan Province, Song County (34°08'N, 112°05'E; alt. 1 560 m), 22–23 July 2001, leg. ZHANG Dan-Dan; 1 ♂, Henan Province, Lushi County (34°03'N, 111°02'E; alt. 1 700 m), 20 July 2001, leg. ZHANG Dan-Dan; 4 ♂♂, Henan Province, Neixiang County (33°02'N, 111°50'E; alt. 1 350 m), 13–15 July 2001, leg. LI Hou-Hun; 1 ♂, same data except 650 m, 12 July 2001; 1 ♀, Hefeng County (29°53'N, 110°02'E; alt. 1 260 m), 16 July 1999, leg. LI Hou-Hun; 1 ♂, Guangdong Province, Lianzhou (24°48'N, 112°23'E; alt. 650 m), 25 June 2004, leg. ZHANG Dan-Dan; 10 ♂♂, 1 ♀, Guangdong Province, Nanling (23°20'N, 115°23'E), 21–28 June 2008, leg. CHEN Liu-Sheng and WANG Min; 1 ♂, 1 ♀, Guangdong Province, Nanling (23°20'N, 115°23'E), 7–10 July 2007, leg. CHEN Liu-Sheng and WANG Min; 5 ♂♂, Shaanxi Province, Feng County (33°55'N, 106°31'E; alt. 1 600 m), 9–12 July 1988, leg. LI Hou-Hun; 1 ♂, Shaanxi Province, Houzhenzi (33°51'N, 107°50'E; alt. 1 750 m), 20 July 1987, leg. LI Hou-Hun; 1 ♂, Shaanxi Province, Ningshan County (33°19'N, 108°20'E; alt. 1 360 m), 26 June 2007, leg. YU Hai-Li; 1 ♀, Gansu Province, Tianshui (34°37'N, 105°42'E; alt. 1 260 m), 13 Aug. 1988, leg. WU Xing-Yu.

Food plants. *Padus avium* Mill., *Pyrus*, *Malus*, *Crataegus* (Rosaceae), *Quercus* (Fagaceae) (Razowski, 2001).

Distribution. China (Jilin, Zhejiang, Henan, Hubei, Guangdong, Sichuan, Guizhou, Shaanxi, Gansu, Heilongjiang, Fujian, Jiangxi); Japan, Russia, Europe.

**Acknowledgements** We express our thanks to Professor SHEN Xiao-Cheng and Dr. REN Ying-Dang, Henan Academy of Agricultural Sciences; Professor LI Zi-Zhong, Guizhou University; Dr. LI Chuan-Ren, Yangtze University, and Dr. WU Hong and WANG Yi-Ping, Zhejiang Forestry University, for their assistance in the field work. Our thanks also go to Dr. ZHANG Dan-Dan, Sun Yat-sen University; Prof. WANG Min, South China Agricultural University, for the loan of specimens.

## REFERENCES

- Baixeras, J. 2002. An overview of genus-level taxonomic problems surrounding *Argyroploce* Hübner (Lepidoptera: Tortricidae), with description of a new species. *Annals Entomological Society of America*, 95



- (4): 422–431.
- Baixeras, J., Brown, J. W. and Gilligan, T. M. 2010. T@ RTS: Online World Catalogue of the Tortricidae (Version 1.4.0). Available from <http://www.tortricidae.com/catalogue.asp>.
- Brown, R. L. and Powell, J. 1991. Description of a new species of *Epiblema* (Lepidoptera: Tortricidae: Olethreutinae) from coastal redwood forests in California with an analysis of the forewing pattern. *Pan-Pacific Entomologist*, 67 (2): 107–114.
- Byun, B. K., Bae, Y. S. and Park, T. K. 1998. Illustrated Catalogue of Tortricidae in Korea. In: *Insects of Korea* [2], Junghaengsa Publishers, Seoul. 1–137.
- Diakonoff, A. 1981. Tortricidae from Madagascar Part 2. Olethreutinae, 1 (Lepidoptera). *Annales de la Societe Entomologique de France* (N. S.), 17 (1): 7–32.
- Hübner, J. 1816. Verzeichniss bekannter Schmetterlinge. Augsburg. 1–431.
- Inoue, H. 1954. Check List of the Lepidoptera of Japan. I. Micropterygidae-Phalonidae. Tokyo. 1–44.
- Issiki, S. 1957. Tortricidae. In: *Icones Heterocerorum Japonicorum in Coloribus Naturalibus*. 1. Hoikusha, Osaka. 1–318.
- Kawabe, A. 1982. Tortricidae. In: *Moths of Japan*. Kodonasha, Tokyo. 1: 62–151, 2: 158–181.
- Kawabe, A., Komai, F. and Razowski, J. 1992. Tortricidae. In: *Lepidoptera of Taiwan*, Vol. 1, part 2: Checklist. Scientific Publishers, Taipei. 103–109.
- Kuznetsov, V. I. 2001. Tortricidae. In: *Key to the Insects of Russian Far East*. Vol. V. Trichoptera and Lepidoptera. Pt 3. Dal'nauka, Vladivostok. 11–472.
- Li, H-H and Zheng, Z-M 1996. Methods and techniques of specimens of Microlepidoptera. *Journal of Shaanxi Normal University (Natural Science Edition)*, 24 (3): 63–70. [李后魂, 郑哲民, 1996. 小蛾类昆虫标本的研究方法. 陕西师范大学学报 (自然科学版), 24 (3): 66–70]
- Liu, Y-Q and Bai, J-W 1982. Three new species of Sorolophae Diakonoff, 1973 from China. *Entomotaxonomia*, 1: 167–171. [刘友樵, 白九维, 1982. 中国尾小卷蛾亚族三新种. 昆虫分类学报, 1: 167–171]
- Liu, Y-Q and Li, G-W 2002. Fauna Sinica Insecta, Vol. 27, Lepidoptera, Tortricidae. Science Press, Beijing. 1–463. [刘友樵, 李广武, 2002. 中国动物志, 第27卷, 鳞翅目: 卷蛾科. 北京: 科学出版社. 1–463]
- Meyrick, E. 1909. Descriptions of Indian Micro-Lepidoptera X. *Journal of the Bombay Natural History Society*, 19: 582–607.
- Meyrick, E. 1912. Descriptions of Indian Micro-Lepidoptera. X V. *Journal of the Bombay Natural History Society*, 21: 852–877.
- Meyrick, E. 1927. A revised handbook of British Lepidoptera. 1–914.
- Oku, T. 2005. Some Olethreutine moths (Lepidoptera: Tortricidae) from Japan confused with or allied to other known species. *Tinea*, 18 (suppl.): 96–114.
- Pierce, F. N. and Metcalfe, J. W. 1915. Descriptions of three new species of British Tortricidae. *Entomologist's Monthly Magazine*, 51: 8–11.
- Pierce, F. N. and Metcalfe, J. W. 1922. The Genitalia of the Group Tortricidae of the Lepidoptera of the British Islands. Oundle Northants. 1–101.
- Razowski, J. 2001. Die Tortriciden (Lepidoptera, Tortricidae) Mitteleuropas. Frantisek Slamka, Bratislava. 1–319.

## 中国圆点小卷蛾属研究及一新种记述 (鳞翅目, 卷蛾科, 小卷蛾亚科)\*

于海丽<sup>1,2</sup> 李后魂<sup>1\*\*</sup>

1. 南开大学生命科学学院 天津 300071

2. 西北大学生命科学学院 西安 710069

**摘要** 记述了我国圆点小卷蛾属 *Eudemis* Hübner 的种类, 共4种, 其中包括1新种: 郑氏圆点小卷蛾 *E. zhengi* sp. nov.。提供了分种检索表、新种的形态特征图和生殖器图。模式标本保存在南开大学昆虫标本室。

**郑氏圆点小卷蛾, 新种** *Eudemis zhengi* sp. nov. (图1~2)

新种与杨梅圆点小卷蛾 *E. gyrota* (Meyrick) 相似, 但可通过下列特征区别: 雄性外生殖器之颚形突中部的突起宽短, 同时侧缘还具尖角状突起并被细齿, 抱器瓣仅在抱器腹

近基部具1簇刺丛; 后者颚形突中部的突起长指状, 侧缘无突起, 抱器瓣腹缘具3簇刺丛, 分别位于抱器腹基部和端部及抱器端基部2/5处。

正模 ♂, 云南勐腊补蚌 (21°29'N, 101°33'E; 海拔650 m), 25 Aug. 2005, 任应党采; 玻片号 YHL05159。

词源: 新种种名以郑哲民教授的姓氏命名, 以示对郑先生在我国昆虫系统学研究领域做出显著贡献的敬意。

**关键词** 鳞翅目, 卷蛾科, 小卷蛾亚科, 圆点小卷蛾属, 新种, 中国。

**中图分类号** Q969.42

\* 本文为祝贺郑哲民教授执教60周年暨80寿辰而作。

\*\* 通讯作者, E-mail: lihoun@nankai.edu.cn